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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,558	02/13/2002	Reiner Bindig	NY-CERA 237-US	8412

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EXAMINER
DOUGHERTY, THOMAS M

ART UNIT	PAPER NUMBER
2834	

DATE MAILED: 09/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/075,558	BINDIG ET AL.	
	Examiner	Art Unit	
	Thomas M. Dougherty	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 July 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-16 and 18-20* is/are rejected.

7)☒ Claim(s) *17 and 21-25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 June 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

Response to Arguments

Applicant's arguments filed 7/18/23 have been fully considered but they are not persuasive. Both references show structures which are easily matched to that of the Applicants' figure 1 which is noted as an embodiment of the invention. Ergo, if the applicants invention of identical structure achieves the claimed expansion properties for its different parts, so too must that of these references. Therefore the rejections are maintained.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 13 is rejected under 35 U.S.C. 102(e) as being anticipated by Yamada et al. (US 2001/0047796). Yamada et al. show (fig. 1) a piezoceramic multilayer actuator comprising an active region (111), said active region (111) further comprising inner electrodes (21, 22) led out alternately at a surface of said actuator, wherein, for parallel connection, said inner electrodes of identical polarity (21 and 22) of said active region (111) are connected to respective outer electrodes (31, 32), said outer electrodes (31, 32) being disposed on opposite sides of said actuator; electrode-free

piezoelectrically inactive regions (113) further comprising a head region and a foot region; and a transitional region (112) having shrinkage and expansion properties lying between the shrinkage and the expansion properties of said active (111) and inactive (113) regions, said transitional regions (112) interposed between said active region (111) and said respective inactive head and foot regions (113).

Claims 13-16, 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Dam et al. (WO 92/06511) Dam et al. show (fig. 2) a piezoceramic multilayer actuator comprising an active region (210), said active region (210) further comprising inner electrodes (204) led out alternately at a surface of said actuator, wherein, for parallel connection, said inner electrodes of identical polarity (every other electrode) of said active region (210) are connected to respective outer electrodes (212, 212'), said outer electrodes (212, 212') being disposed on opposite sides of said actuator; electrode-free piezoelectrically inactive regions (202) further comprising a head region and a foot region; and a transitional region (206, 208) having shrinkage and expansion properties lying between the shrinkage and the expansion properties of said active (210) and inactive (202) regions, said transitional regions (206, 208) interposed between said active region (210) and said respective inactive head and foot regions (202).

Said transitional regions (206, 208), the electrode-to-electrode spacing between the inner electrodes increases in proximity to said inactive regions.

Said increase in spacing of said inner electrodes starts from the spacing of said inner electrodes in said active region and is effected stepwise in a sequence of natural numbers. Note that if 210 thickness, which is noted as .508 mm is arbitrarily designated

as equivalent to two, then, the 208 and 206 (.762 mm and 1.016 mm) layers are equivalent to three and four.

Said increase in the spacing of said inner electrodes from said transition region through said head region (202) or foot region (202) starts from the spacing of said inner electrodes (210) in said active region (210) and is effected stepwise in a geometric progression. For example if the thickness of each 210 layer is arbitrarily designated as 1 layer thick, then the thickness of layer 208 = 1 + (n x 0.5) where n =1 and layer 206 = 1 + (2n x .5).

The number of steps for increasing the spacing between said electrodes correlates to the differences between the shrinkage and expansion properties between said active region and at least one of said inactive regions. Note that as Dam et al. show the claimed invention such a property is inherent in it. Note also that this is ultimately a goal of the invention and its recitation does not further limit the claimed structural features, thus as it now stands, this recitation doesn't carry an patentable weight.

The maximum spacing between the last two electrodes in said transitional region (208, 206) is up to 2 mm.

Said maximum spacing is 0.1 to 1.0 mm. Note that Dam et al. show their maximum thickness as 1.016 mm with a tolerance of $\pm$ 0.013 mm which range provides for an effective thickness of about 1.0 mm.

Allowable Subject Matter

Claims 17 and 21-25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance: The prior art fails to show a multilayer actuator wherein an increase in the thickness of inner electrodes in a transitional region between an active region and an inactive region is effected stepwise according to a logarithmic scale. Additionally, the prior art fails to show or fairly suggest respective transitional regions consisting of modified piezoceramic material, such that the shrinkage and expansion properties of the material lies within the shrinkage and the expansion properties of the active region.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Direct inquiry concerning this action to Examiner Dougherty at (703) 308-1628.

tmd

September 16, 2003

Thomas M. Dougherty

8